

What is Science?

- *Science* =
 - Organized way of gathering and analyzing evidence about the natural world
 - Knowledge gained through observation and experimentation
- “Scientific Method”
 - “Stop Running From The Dog”
 1. State the Problem
 2. Research
 3. Form a Hypothesis
 4. Test the Hypothesis
 5. Draw a Conclusion

STATE THE PROBLEM

- **Observation** =
 - Noticing and describing events or processes in a careful, orderly way

RESEARCH

- **Inference** =
 - Logical interpretation based on prior knowledge and experience

FORM A HYPOTHESIS

- **Hypothesis** =
 - Possible answer to a scientifically testable question

TEST THE HYPOTHESIS

- Only ONE factor should be changed at a time
 - **Independent variable** =
 - Factor in a controlled experiment that is deliberately changed
 - **Dependent variable** =
 - Factor being observed that changes in response to the independent variable
- ALL other factors should remain constant
 - **Control group** =
 - Exposed to same conditions as experimental group except for ONE independent variable
- Collect **Data** =
 - Evidence gathered from observations
 - **Qualitative observations** =
 - Descriptive characteristics
 - **Quantitative observations** =
 - Numbers obtained through counting or measuring

DRAW A CONCLUSION

- **Theory** =
 - Well-tested explanation that enables scientists to make accurate predictions
 - Never been shown to be false
- **Law** =
 - Generalizes a body of observations
 - Describes things but does not explain them
 - Basis of scientific principles
- **Principle** =
 - Concept based on scientific laws where general agreement is present
- **Fact** =
 - Objective, verifiable observation